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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,098	09/09/2003	Philip E. Nelson	PU113	9965

7590 12/11/2006

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EXAMINER

CONLEY, SEAN EVERETT

ART UNIT PAPER NUMBER

1744

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/658,098	Applicant(s) NELSON ET AL.	
	Examiner Sean E. Conley	Art Unit 1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 8-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 16-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/9/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed August 21, 2006 has been received and considered for examination. Claims 1-21 are pending with claims 8-15 being withdrawn as being directed to a non-elected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 18 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, claim 18 recites "wherein circulation of the gas mixture achieves a reduction in a target microorganism of 5 log or more". This limitation is new matter since it has not been previously presented in the claims and it is not taught or disclosed by the specification.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-3, 7, 18, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raasch et al. (U.S. Patent No. 6,277,328 B1) in view of Heredia (U.S. Patent No. 5,961,936) and Rosenblatt et al. (U.S. Patent no. 4,504,442).

Regarding claims 1, 2, 7, and 21, Raasch et al. discloses a process aseptically transporting a bulk quantity of a sterile product such as an edible food product. The process comprises sterilizing a transporting container (bulk tank) by first circulating chlorine dioxide gas for a period of time inside the container and then removing the chlorine dioxide gas from the container (see col. 4, lines 29-50). Raasch et al. fails to teach the step of reclaiming the chlorine dioxide gas by dissolving it in a solvent in a gas-dissolving tank.

Heredia discloses a process generating, administering, extracting, and recovering sterilant gas such as chlorine dioxide from a process of sterilizing and/or decontaminating enclosed spaces (see col. 1, lines 5-10). The steps of extracting and recovering include passing the sterilant gas through a gas recovery system (310) via line (302) after the sterilization process is complete. The gas mixture that has already been circulated through an enclosed space needs to be exhausted in an environmentally safe manner and/or treated in a manner that facilitates the recovery of one or more ingredients. The gas mixture containing chlorine dioxide is passed through

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inlet (316) and into scrubber (334) wherein the gas mixture is interacting with a scrubber solution (see col. 14, lines 30-61; col. 15, lines 28-32). Heredia discloses that scrubber solutions are well known to those of ordinary skill in the art, however, as evidenced by Harke et al. (U.S. Patent No. 3,904,496), a known scrubber solution for recovering chlorine dioxide is water. When the water is contacted with a gas mixture containing chlorine dioxide it will separate out the chlorine dioxide as an aqueous solution from the other components of the gas stream (see col. 4, lines 42-58 of Harke et al.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Raasch et al. and include the step of reclaiming the chlorine dioxide gas by directing the gas to a gas dissolving tank where the chlorine dioxide gas is dissolved in a solvent (water) as taught by Heredia in order to recover the chlorine dioxide for environmentally sensitive disposal or for later use in generating a new sterilant gas.

Furthermore, Raasch et al. is silent with regards to the relative humidity, the specific chlorine dioxide concentration, and the specific carrier means for dispersing the chlorine dioxide gas into the transporting container, therefore, it would have been necessary and thus obvious to look to the prior art for the conventional relative humidity, the convention chlorine dioxide concentration, and the convention carrier means for distributing the sterilant gas into the chamber to be treated. Rosenblatt et al. provides this conventional teaching showing that it is known in the art to mix chlorine dioxide gas with an inert carrier for distribution into the treatment chamber where surfaces are contaminated (see col. 3, lines 35-45). Rosenblatt et al. further discloses that the

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chlorine dioxide gas mixture is effective at sterilizing contaminated surfaces when the mixture has a relative humidity of 60% (within the applicant's claimed range of 30% to about 100%) and a chlorine dioxide concentration near 35 mg/L (within the applicant's claimed range of 1 to about 50 mg/L) (see claims 1 and 3; see col. 4, lines 39-68; see col. 6, lines 24-51; see table 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a gaseous sterilant mixture comprising an inert carrier gas, a chlorine dioxide gas with a concentration near 35 mg/L, and a relative humidity of 60% motivated by the expectation of successfully practicing the invention of Raasch et al.

Regarding claim 3, Raasch et al. discloses that the chlorine dioxide gas is produced outside of the container (see col. 2, line 65 to col. 3, line 28; col. 5, lines 5-8).

Regarding claim 18, it would have been obvious to one of ordinary skill in the art to modify the process of Raasch et al. and optimize the parameters of temperature, concentration, flow rate, humidity, and duration to achieve a desired reduction of target microorganisms of 5 log or more. These parameters are result effective variables and it has been held that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raasch et al. in view of Heredia and Rosenblatt et al. as applied to claim 1 above, and further in view of Barenberg et al. (US Patent Application Publication 2003/0190273 A1).

Raasch et al., Heredia, and Rosenblatt et al. fail to teach the step of producing chlorine dioxide gas inside of the container.

Barenberg et al. discloses a container liner for generating an antimicrobial gas such as chlorine dioxide in order to control bacteria, mold, and fungus on perishable food items (see paragraphs [0001]-[0003]). The chlorine dioxide gas is generated inside the container over a length of time thereby increasing shelf life and preserving the quality of the food. The liner (10) is located in a food container (display case (14)) and comprises compartments (20) containing gas-generating chemicals (22) which generate chlorine dioxide gas inside the food container (14) (see paragraphs [0017]-[0019], [0025], [0030]). This reference has been relied upon to teach that it is well known to generate chlorine dioxide gas inside of a food container.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Raasch et al. and include the step of generating chlorine dioxide gas inside of the chamber as taught by Barenberg et al. in order to extend shelf life and preserve quality of the food for a longer period of time by constantly generating and releasing chlorine dioxide over a predetermined period of time when food is present within the container. Furthermore, by generating the chlorine dioxide gas inside of the container it reduces the hazards and risks to users who would otherwise handle the chlorine dioxide gas that is generated externally and injected into the container.

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6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raasch et al. in view of Heredia, Rosenblatt et al., and Barenberg et al. as applied to claim 4 above, and further in view of Mayurnik et al. (U.S. Patent No. 5,006,326).

Raasch et al., Heredia, Rosenblatt et al., and Barenberg et al. fail to teach the step of producing chlorine dioxide inside the container by providing an aqueous chlorine dioxide solution in the storage container and bubbling a gas through the solution in the storage container.

Mayurnik et al. discloses a gaseous generator system for preparing chlorine dioxide gas. The chlorine dioxide gas is useful for a variety of process including a large number of bactericidal applications, especially in odor abatement and water treatment (see col. 1, lines 1-21). The process first includes the step of providing an aqueous stream of chlorine dioxide and then contacting the aqueous stream with an inert gas stream or an air stream in countercurrent fashion in order to strip the chlorine dioxide from the aqueous stream and thereby produce a gaseous stream of chlorine dioxide (see col. 2, lines 19-35). This reference has been relied upon to teach a functionally equivalent alternative means for generating chlorine dioxide gas.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Raasch et al. and replace the means of generating chlorine dioxide (gas generating chemicals in compartments of a liner – see Barenberg et al.) with a functionally equivalent viable alternative such as the process taught by Mayurnik et al. which includes the steps of providing an aqueous stream of chlorine dioxide and then contacting the aqueous stream with an inert gas

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stream or an air stream in countercurrent fashion in order to strip the chlorine dioxide from the aqueous stream and thereby produce a gaseous stream of chlorine dioxide.

Furthermore, it would have been obvious to select the known process of Mayurnik et al. for generating chlorine dioxide gas in place of the chlorine dioxide generating process of Raasch et al. based on its suitability and desired characteristics.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raasch et al. in view of Heredia and Rosenblatt et al. as applied to claim 1 above, and further in view of Young et al. (U.S. Patent No. 4,193,818).

Raasch et al., Heredia, and Rosenblatt et al. fail to teach the step of removing the chlorine dioxide gas by flushing the container with a filtered gas.

Young et al. discloses a container (pressure vessel (10)) having a chamber (18) for sterilizing articles using ultrasonic energy and biocidal treatment. After the step of sterilization the sterilizing fluid is vented from the chamber and air is admitted into the chamber (18). Specifically filtered air is used to flush the sterilant from the chamber in order to assure that the sterilized materials are not re-infected with bacteria from the air stream (air is a gas) passing therethrough (see figure 1; col. 3, lines 15-32; col. 6, line 49 to col. 7, line 5). This reference has been relied upon to teach that it is well known in the art of sterilant removal after treatment to use a filter air stream to flush out the chamber in order to prevent contamination of the sterilized materials.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Raasch et al. and include the

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step of flushing the sterilant out of the container using filtered air as taught by Young et al. in order to remove the sterilant from the container and also prevent contamination of the articles that were just sterilized.

8. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raasch et al. in view of Rosenblatt et al., and Heredia as applied to claim 1 above, and further in view of Hampel (U.S. Patent No. 2,489,574).

Raasch et al., Rosenblatt et al., and Heredia are silent with regards to specific inert carrier gases, therefore, it would have been necessary and thus obvious to look to the prior art for conventional materials. Hampel provides this conventional teaching showing that it is known in the art that air and nitrogen are inert with respect to chlorine dioxide gas and suitable as a carrier gas (see col. 5, lines 45-51). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select air or nitrogen as the inert carrier gas motivated by the expectation of successfully practicing the modified invention of Raasch et al.

9. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raasch et al. in view of Heredia and Rosenblatt et al. as applied to claim 1 above, and further in view of Jefferis, III et al. (U.S. Patent No. 4,908,188).

Raasch et al. in view of Heredia and Rosenblatt et al. disclose the claimed invention except for a means to monitor and control at least one of gas concentration, humidity, temperature, and pressure.

Jefferis, III et al. discloses a method of sterilizing a chamber by using chlorine dioxide as the sterilizing gas. The process includes the steps of monitoring the temperature, pressure, humidity, and sterilizing gas concentration inside the treatment chamber and also controlling these parameters to maintain an effective amount of sterilizing chlorine dioxide gas in the chamber (see col. 1, lines 13-68; see col. 4, lines 25-68; see col. 5, lines 5-68).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Raasch et al. and include the step of monitoring and controlling the chlorine dioxide gas concentration, humidity, and temperature as taught by Jefferis, III et al. in order to provide effective amounts of the sterilizing gas to the chamber being treated.

Response to Arguments

10. Applicant's arguments with respect to claims 1-7 and 16-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean E. Conley whose telephone number is 571-272-8414. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sec

K. E. L.
December 4, 2006

Krisanne Jastrzab
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PRIMARY EXAMINER